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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,519	09/24/2003	Kuldeep Simha	200209671-1	4341

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HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

KRAVETS, LEONID

ART UNIT PAPER NUMBER

2189

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/669,519	SIMHA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Leonid Kravets	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-18 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action has been issued in response to amendment filed 9 January 2006. Claims 1-8 and 16-30 are pending. Applicant's arguments have been carefully and fully considered in light of the instant amendment, but they are not persuasive. Accordingly this action has been made **FINAL**.

### ***Election/Restrictions***

2. Examiner appreciates and acknowledges response to the requirement to restriction of Group I, claims 1-8 and 16-24.

### ***Title***

3. Examiner acknowledges the amendment to the title provided in the amendment filed 9 January 2006.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-3, 6-8, 19 and 21-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Khieu et al. (US Patent 6,493,790).

6. As per claim 1, Khieu discloses a content addressable memory (CAM) system comprising:

at least one CAM entry comprising a plurality of CAM fields, the plurality of CAM fields comprising a first field and a second field [The first field excludes a portion of CAM

cell row from comparison; while the second field includes the portion of CAM cell row for comparison (Col 5, lines 52-56)];

at least one input selector that enables access to the first field in a first mode and the second field in a second mode that controls access to the plurality of CAM fields, ~~such that retrieval of a subset of the plurality of CAM fields is selectively enabled~~ [The portion of CAM cell row is includes or excluded from comparison selectively, thus there is an input selector that enables access to the first field by excluding the portion of CAM cell row, or enables access to the second field by including the portion of CAM cell row (Col 5, lines 53-55). The current limiting device is the input selector (Col 6, Lines 41-45)]; and

a match evaluator that compares ~~[[an]]~~ the enabled subset of CAM fields to a search value [Khieu discloses that CAM cell field, including or excluding the portion of CAM cell row is compared with the compare signals (Col 5, lines 53-56, Col 2, lines 17-19)].

7. As per claim 2, Khieu discloses the system of claim 1, ~~the plurality of CAM fields comprising at least one CAM field~~ first field being associated with a physical address and ~~at least one CAM field~~ second field being associated with a virtual address [In the system of Khieu, since the fields of the CAM are virtual addresses and are being translated into physical addresses, the first field and the second field are associated with both virtual and physical addresses. Thus, examiner interprets the first field being

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associated with a physical address and the second field being associated with a virtual address (Col 1, Lines 21-24)].

8. As per claim 3, Khieu discloses the system of claim 1 2, ~~the at least one input selector comprising a plurality of input selector components, a given input selector component enabling access to one of a CAM field associated with the physical address and a CAM field associated with the virtual address~~ at least one of the first field and the second field is interleaved with at least one other of the plurality of CAM fields [Since the first field is a subsection of the second field, these fields are interleaved with each other (Col 5, Lines 52-56)].

9. As per claim 6, Khieu discloses the system of claim 1, further comprising a driver that provides a control input to the input selector and provides a given search value to the match evaluator (Fig 4, Ref 47).

10. As per claim 7, Khieu discloses a memory cache system comprising the system of claim 1 (Fig 1).

11. As per claim 8, Khieu discloses a processor assembly comprising the memory cache system of claim 7 (Fig 1).

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12. As per claim 19, Khieu discloses a method of searching a content addressable memory comprising:

selecting a first CAM field from a memory entry in a first mode ~~comprising at least a first CAM field~~ and a second CAM field from the memory entry in a second mode [The portion of CAM cell row is includes or excluded from comparison selectively, thus there is an input selector that enables access to the first field by excluding the portion of CAM cell row, or enables access to the second field by including the portion of CAM cell row (Col 5, lines 53-55). The current limiting device is the input selector (Col 6, Lines 41-45)]; and

enabling access between comparison logic associated with the CAM and the selected one of the first CAM field and the second CAM field [comparison lines from each CAM cell are attached to the current limiting device, attaching either the first field excluding the portion of CAM cell row or the second field, including the portion of CAM cell row (Fig 4, Ref 47)].

13. As per claim 21, Khieu discloses the method of claim 19, the selecting of one of the a first CAM field and the second CAM field comprising providing a control signal that has a first state in the first mode and a second state in the second mode to one or more input selectors [enable signal of current limiting device, which selects the first field by excluding the portion of CAM cell row or selects the second field by including the portion of CAM cell row (Fig 4, Ref 47)].

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14. As per claim 22, Khieu discloses a system for searching a content accessible memory (CAM) comprising:

means for selectively enabling access to a stored physical address associated with a first CAM field if a physical address mode is selected and a stored virtual address associated with a second CAM field if a virtual address mode is selected ~~a plurality of CAM fields, such that a subset of the CAM fields can be enabled~~ [Examiner interprets the physical address mode to be the mode excluding the portion of CAM cell row and the virtual address mode to be the mode including the portion of CAM cell row (Col 5, Lines 53-55)];

means for comparing the selectively enabled CAM field ~~subset of CAM fields~~ to a search value (Col 5, lines 53-56 and Col 6, Lines 41-45).

15. As per claim 23, Khieu discloses the system of claim 22, further comprising means for providing a control signal to the means for selectively enabling, the control signal having a first state in the physical address mode and a second state in a virtual address mode ~~comprising means for selecting the subset of CAM fields according to an associated control signal~~ [enable signal of current limiting device (Fig 4, Ref 47)].

16. As per claim 24, Khieu discloses the system of claim 22, the CAM system being a translation look-aside buffer ~~at least one of the plurality of CAM fields representing a virtual address and at least one of the plurality of CAM fields representing a physical address~~ (Col 5, Lines 7-10).



17. As per claim 25, please see rejection of claim 24. Claim 27 is rejected for similar reasons.

18. As per claim 26, Khieu discloses the system of claim 1, wherein the CAM entry comprises a plurality of storage units, at least one of the plurality of storage units being associated with both the first field and the second field (Fig 4, Ref 45)

19. As per claim 27, please see rejection of claim 24. Claim 27 is rejected for similar reasons.

20. As per claim 28, please see rejection of claim 24. Claim 27 is rejected for similar reasons.

21. As per claim 29, please see rejection of claim 8 above. Claim 29 is rejected for similar reasons.

22. As per claim 30, please see rejection of claim 26 above. Claim 30 is rejected for similar reasons.

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khieu as applied to claim 1 above, and further in view of Threewitt (US Patent 5,383,146).

As per claim 20, Khieu discloses a method of claim 19, the first CAM field comprising one of a virtual address and a physical address. Khieu discloses the other field being stored in a RAM. Further, Threewitt discloses a CAM functioning as a RAM (Col 6, Lines 20-23). Thus, the physical addresses of Khieu's RAM can be stored in a CAM field

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the CAM cells functioning as RAM cells of Threewitt into the system of Khieu, since Khieu and Threewitt form the same field of endeavor, namely CAM memories and this would allow for better performance in searching.

26. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khieu.

As per claim 4, Khieu discloses the system of claim 1. The match evaluator of Khieu is an operational amplifier. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use pull down transistors to achieve the same effect.

As per claim 5, Khieu discloses the system of claim 1. Khieu does not disclose the at least one input selector comprising at least one multiplexer. A multiplexer is well known in the art as a device for selecting an input from multiple ones of inputs. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a multiplexer to select an input.

***Allowable Subject Matter***

27. Claims 16-18 are allowed.

### ***Response to Arguments***

28. In response to applicant's argument in Section III pertaining to amended claims 1, 19 and 22 that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., separate CAM fields) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Kravets whose telephone number is 571-272-2706. The examiner can normally be reached on Mon-Fri 8-430.

31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached at 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Leonid Kravets  
Patent Examiner  
Art Unit 2189

February 14, 2006



BEHZAD JAMES PEIKARI  
PRIMARY EXAMINER